

Factoring and Rationals Test Review

Name: _____ Date: _____

Factor Algebraic Expressions

1. Factor the following polynomial.

$$3x^2 + 7x$$

- ☐ A. $x(3x + 7)$
- ☐ B. $3x + 7$
- ☐ C. $x^2(3x + 7)$
- ☐ D. $5x(3x + 25)$

Factor Algebraic Expressions

2. Factor the polynomial below.

$$x^2 + 4x + 4$$

- ☐ A. $(x + 2)^2$
- ☐ B. $x^2 + 4$
- ☐ C. $2x^2 + 4$
- ☐ D. $(x + 4)^2$

Rational Algebraic Expressions

3. Simplify the following expression.

$$\frac{x^2 - 25}{x + 5}$$

- ☐ A. $x - 25$
- ☐ B. $x - 5$
- ☐ C. $x + 5$
- ☐ D. $x + 20$

Rational Algebraic Expressions

4. Simplify the following expression.

$$\frac{x^2 + 12x + 32}{x^2 + 2x - 8}$$

☐ A. $\frac{x-8}{x+2}$

☐ B. $\frac{x+8}{x-2}$

☐ C. $\frac{x-8}{x-2}$

☐ D. $\frac{x-8}{x+2}$

Rational Algebraic Expressions

5. Simplify the following expression.

$$\frac{2x^3 + 18x^2 - 8x}{2x}$$

☐ A. $x^2 + 16x - 6$

☐ B. $x^2 + 9x - 4$

☐ C. $2x^3 + 18x^2 - 4$

☐ D. $19x^2 + 4x$

Factor Algebraic Expressions

6. Factor the polynomial below.

$$x^2 - x - 12$$

- ☐ A. $(x-3)(x-4)$
- ☐ B. $(x-3)(x+4)$
- ☐ C. Prime
- ☐ D. $(x+3)(x-4)$

Rational Algebraic Expressions

7. Simplify the following expression.

$$\frac{4x^2 + 28x + 48}{4x^2 + 4x - 48}$$

- ☐ A. $\frac{x-3}{x+12}$
- ☐ B. $\frac{x-3}{x-3}$
- ☐ C. $\frac{x-3}{4x-1}$
- ☐ D. $\frac{x+3}{x-3}$

Factor Algebraic Expressions

8. Factor the polynomial below.

$$x^2 - 36$$

- ☐ A. $(6+x)(6-x)$
- ☐ B. $(x-6)^2$
- ☐ C. $(x+6)(x-6)$
- ☐ D. $(6-x)^2$

Factor Algebraic Expressions

9. Factor the polynomial completely.

$$6x^3 + 36x^2 - 96x$$

- ☐ A. $6(x^2 - 2)(x + 8)$
- ☐ B. $6(x^2 + 8)(x - 2)$
- ☐ C. $6x(x + 8)(x - 2)$
- ☐ D. $6x(x - 8)(x + 2)$

Rational Algebraic Expressions

10. Simplify the following expression.

$$\frac{6x^2 - 12x - 18}{3x - 9}$$

- ☐ A. $\frac{3x + 3}{x - 10}$
- ☐ B. $3x - 3$
- ☐ C. $\frac{3x + 3}{10x - 1}$
- ☐ D. $2x + 2$

Factor Algebraic Expressions

11. Factor the polynomial below.

$$x^2 - 10x + 24$$

- ☐ A. $(x+6)(x+4)$
- ☐ B. $(x-6)(x-4)$
- ☐ C. $(x-6)(x+4)$
- ☐ D. $(x+6)(x-4)$

Factor Algebraic Expressions

12. Factor the following polynomial completely.

$$-6x^2 + 12x + 48$$

- ☐ A. $6(x+4)(x+2)$
- ☐ B. $6(x-4)(x+2)$
- ☐ C. $-6(x+4)(x+2)$
- ☐ D. $-6(x-4)(x+2)$

Factor Algebraic Expressions

13. Factor the polynomial below.

$$x^2 + 9x + 20$$

- ☐ A. $(x+4)(x+5)$
- ☐ B. $(x+4)(x-5)$
- ☐ C. $(x-4)(x+5)$
- ☐ D. $(x-4)(x-5)$

Factor Algebraic Expressions

14. Factor the polynomial below.

$$-3a^3b^2 - 18ab^2$$

- ☐ A. $3ab^2(a^2 + 6)$
- ☐ B. $3ab^2(a^2 - 6)$
- ☐ C. $-3ab^2(a^2 - 6)$
- ☐ D. $-3ab^2(a^2 + 6)$

Factor Algebraic Expressions

15. Factor the polynomial below.

$$x^2 - 2x + 20$$

- ☐ A. $(x-10)(x+2)$
- ☐ B. $(x+10)(x+2)$
- ☐ C. $(x-10)(x-2)$
- ☐ D. Prime

Open Ended Questions

Factor the following expressions

16. $-x^2 - x + 6$

17. $2x^2 - 18x + 20$

18. $-3x^2 + 18x - 4$

19. Jasmine is making a rectangular display for the school play. The width is 5 feet longer than the height.

A. Draw a diagram to depict the display & its dimensions

B. Write a polynomial expression, *in simplified form*, that represents the **area** of the display.

C. The drama teacher asked Jasmine to add a 3 feet boarder around the entire display.

Write a polynomial expression, in simplified form, that represents the **total area** of the smaller pool.